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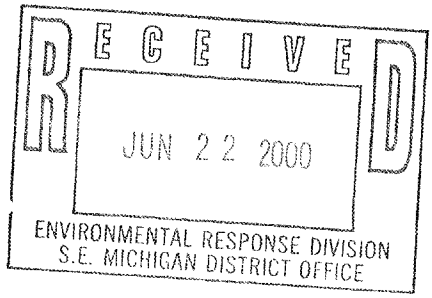

Ms. Jacqueline Nichele
Project Manager
United States Environmental Protection Agency
Region V, (DE-9J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: Alternatives for the Corrective Measures Study
BASF Corporation, North Works Property
Wyandotte, Michigan

Dear Ms. Nichele:

BASF Corporation is preparing the Corrective Measures Study (CMS) Report for the BASF North Works Facility in Wyandotte, Michigan. BASF with Parsons Engineering Science, Inc. (Parsons ES) completed the CMS field program and presented the findings and conclusions to the United States Environmental Protection Agency, Region V, on March 21, 2000. This correspondence provides the EPA with our general approach to the remainder of the CMS and an overview of the alternatives proposed for assessment.

Both the RFI Report (QST Environmental, March 1999) and the CMS Field Program Report (Parsons ES March 2000) indicate groundwater is the main pathway for chemicals to leave the property and potentially impact off-site locations. Groundwater flow off site can occur along the northern, eastern, and southern property boundaries. Groundwater may leave from the Native Sand unit, from the Fill unit, or from both units. The CMS will evaluate key alternatives that when implemented will remedy this main pathway.

The property supports an active BASF industrial facility. BASF plans to hold this property in perpetuity and to maintain and/or expand current production operations. As such, BASF proposes to control groundwater flow site wide. We believe this approach fulfills our requirements and objectives under the Administrative Order on Consent dated February 24, 1994.

In March 1995, Woodward-Clyde Consultants, on behalf of BASF, prepared a report titled *RCRA Facility Investigation Pre-Investigation Evaluation of Corrective Measures.* That report presented initial screening information on corrective measures that could be applicable to the North Works. The alternatives Parsons ES proposes to evaluate are a subset of those corrective measures.

Parsons ES is BASF's consulting engineer performing the CMS and preparing the CMS report. Section 5 of the CMS Field Program Report (March 2000) presented a summary of the data generated from the program. Based on those findings and on the

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findings in the RFI, BASF and Parsons ES propose fashioning corrective measure alternatives that incorporate the following elements:

- Hydraulic barriers to separate on-site groundwater from off-site groundwater and from surface water.
- Groundwater recovery and collection systems.
- Treatment systems to remove chemicals from groundwater before discharge.

These individual elements are discussed further in the following paragraphs.

Groundwater quality and characteristics vary across the property. These differences suggest that the site may be divided into separate zones where different collection and treatment options may be advantageous. For example, the chemical constituents in the groundwater in the northern portion of the site are primarily aromatics, while in the central portion of the site chemical constituents are primarily chlorinated compounds. In the southern portion of the site there is a mixture of aromatics, chlorinated compounds, and some metals. Therefore, an efficient system in the northern zone may not be as efficient in the southern zone. Given these differences, the CMS will assess the appropriateness of installing and maintaining separate treatment systems for different zones.

The following paragraphs summarize the anticipated components of each remedial element. For hydraulic barrier walls, we expect to evaluate:

- The installation of slurry walls, slurry trenches, sheet pile walls, or other subsurface barriers along sections of the property boundaries.
- The retrofitting of the existing sheet pile wall along the eastern shoreline.
- The placement of a grout curtain or a grout-injected wall behind the existing sheet pile wall to promote water tightness.

Groundwater collection systems are needed to prevent flooding of the site once hydraulic barriers are in place. We expect to evaluate:

- Subsurface drains or trenches to intercept groundwater.
- Horizontal wells at various depths and locations (in the Fill, in the Native Sand, or in both units).
- Use and expansion of the existing groundwater extraction-well network. Any new wells would be installed if they could be compatible with the existing system's capabilities. While data from the field program indicate that precipitation and fouling will be problematic for any alternative using underground pumping, this element is retained because of its compatibility with the existing system.

Once collected, groundwater would be treated before discharge. At this time, BASF and Parsons ES assume we will discharge treated water in accordance with either our

existing NPDES permits or our industrial pretreatment permit with the Wayne County Wastewater Treatment Plant. We expect to evaluate:

- The current on-site treatment system. This system employs two vessels containing 20,000 pounds of activated carbon. The vessels are connected in series and are effective in removing organic chemicals from groundwater.

- New treatment systems at one or more locations to treat groundwater. New systems may be desirable to treat certain groups of chemicals (aromatic organics versus chlorinated organics). Additionally, a new system may be useful because the lifting and transport capabilities of one system may not be adequate to move groundwater across the property for treatment. Examples of selected technologies include: air stripping, carbon absorption, flocculation, precipitation, reverse osmosis, and ion exchange.

- Using trees with large water uptake capabilities (such as some hybrid varieties of poplar trees). The trees would act as supplemental water uptake systems during the growing season. We believe the evapo-transpiration capabilities of the trees can significantly reduce the volume of water needing to be collected and treated. This is not a phyto-remedial alternative, but simply an alternative to reduce the volume of groundwater on site.

In addition to site-wide groundwater control measures, the CMS will include assessments of specific issues, including:

- Implementing a localized recovery and treatment system for the toluene area (AOC1) to treat volatile organic compounds in groundwater, surface water, and soil. Technologies such as air sparging and soil vapor extraction will be evaluated.
- Physically containing the coal tar area (AOC 4). This may include dewatering or lowering the water table to reduce the hydrostatic pressure.

- A sewer line from one of the laboratories unexpectedly has shown detectable concentrations of mercury in the effluent. The condition of this line will be assessed and an appropriate remedy proposed.

As outlined in previous correspondence and reports, some areas of the property are not being addressed in this CMS. For example:

- Data from the mass flux emissions testing indicated there is not an unacceptable risk through the inhalation pathway associated with the SWMU H and AOC 5 area. Therefore, removal and capping corrective measures once thought to be desirable will not be assessed.

- Removal actions associated with subsurface materials are not deemed necessary since site-wide groundwater control is the stated goal for the CMS.

- Alternatives associated with the sediment media in the Detroit River were eliminated since sediments are not being assessed as part of the CMS.

BASF believes that it would be beneficial to this project if representatives from the EPA, Parsons ES, and BASF meet prior to commencing this work. Hopefully, our discussions during the meeting will help ensure there is a consensus on the CMS approach, on the corrective action objectives, and on the compliance monitoring requirements. Please let us know when you could be available for this meeting. Since you have not had an opportunity to tour the North Works or to visit the lovely City of Wyandotte, BASF proposes to host the meeting. If travel to Wyandotte is not feasible in the short term, we would be glad to meet with you in Chicago.

If you have any questions or require additional information, please contact Mr. Jack Lanigan at (734) 324-6219, or me at (734) 324-6209.

Sincerely,

Thomas F. McGourty
Manager, Safety, Health, and the Environment

cc: J. Lanigan – BASF
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